

# Freedom of research in a democratic society

*Is there a contradiction between socially desirable science and freedom of research?*

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Academic research has been an important element of democratic societies and a major driver of technical and social progress since the Enlightenment. Vice versa, research thrives and performs best in open democratic societies that provide a constitutional guarantee of the freedom of research. Nonetheless, the conditions and rules imposed on research in a democracy depend on the societal ideals and values and the type of study. For instance, current science policy frameworks increasingly see academic science as applied research and as a first step towards the development of new technologies, products and services to address contemporary societal, economic or ecological problems. Interviews with senior scientists on the role of researchers in society support the impression that current science policy prioritises applied research against basic research. Several interviewees mentioned that to receive funding they are expected to highlight applicability of research [1].

This focus on applied research goes hand in hand with an understanding that research should be socially desirable. Indeed, there is a tendency in modern societies to interpret democratic ideals for research as giving the public at large a say in shaping research agendas and goals.

However, as we argue in this comment, there is another democratic ideal that is relevant to academic research, namely the above-mentioned “freedom of research”. While democratic participation and supporting applied research have a value, it is equally relevant—for social and democratic

reasons—to maintain the ideal of “freedom of research” when it comes to basic research.

## Types of research

We can distinguish between three types of research: basic research, applied research and technological innovation. Technological innovation—as understood here—involves design and invention towards new processes and devices for the creation of desired products and services. In contrast, basic research depends on enquiry and discovery to advance knowledge and understanding by developing generalisable theories. Applied research is an intermediate category that combines elements of the other two. The respective researchers work to increase their understanding of nature but with the explicit aim of solving particular problems. Basic research is also often described as “curiosity-driven research”, whereas applied research and technological innovation refer to “need-driven research” [2].

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In practice, these fields often converge. In many research groups, projects with the explicit aim to gain knowledge are performed next to projects with more

product-oriented goals. Many universities hold patents on technological inventions, and spin-off companies are often founded based on findings from academic research laboratories. However, the fact that, in practice, the different types of research often cannot be separated does not imply that there are no conceptual differences. This may be illustrated with an analogy of two activities that are conceptually different, but converge in practice: *farming* and *gardening*. Sometimes, both may coincide, for instance, in a garden with fruit trees. Nevertheless, farming and gardening are two distinct activities with different aims and problems. Likewise, for a sound understanding of the impact of research and innovation on today's society, it is important to be aware of the differences in aims and problems between basic research, applied research and technological innovation.

## Democratising science

During the past few decades, democratic ideals have played an increasingly important role in research policy. *Citizen Science* projects, for instance, involve non-scientists in the research process itself; examples include the active participation of patients in medical research or collaboration with residents in environmental research [3]. The inclusion of laypeople in research goes beyond the process of carrying out research activities. The phrase “democratising research” itself stands for involving society in setting up research priorities and agendas. For instance, some argue that those who are

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affected by the implications and products of clinical research should have a say in the research agenda [4]. Similar arguments can be brought forward for research in agriculture and other fields.

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The importance of considering democratic ideals in a research context also features large in science policy. For instance, Horizon 2020, the EU Framework Programme for Research and Innovation, includes a special programme called “Science with and for Society” “to build effective cooperations between science and society” [5]. Central elements of the science policy framework “Responsible Research and Innovation” (RRI) are interaction of scientists with other members of society and the consideration of societal priorities in the research agenda. This idea is reflected in an often cited definition: “Responsible Research and Innovation is a transparent, interactive process by which societal actors and innovators become mutually responsive to each other with a view to the (ethical) acceptability, sustainability and societal desirability of the innovation process and its marketable products (in order to allow a proper embedding of scientific and technological advances in our society)” [6].

## Freedom of research

While current science policy focuses on societal priorities to guide research agendas, there is another—older—policy ideal with a democratic foundation. “Freedom of research” grants, often as a constitutional guarantee, research autonomy in selecting research topics and methods to prevent, for example, political or economic pressure from influencing the research agenda and results. Together with the freedom of teaching and freedom of expression, it is considered a central element of academic freedom (e.g. [7]), which is protected by the 1997 “UNESCO Recommendation concerning the Status of Higher-Education Teaching Personnel” [8].

This freedom is not absolute but restricted by laws and regulations to

protect other freedoms. For example, clinical research on patients or human volunteers is regulated to ensure the rights and dignity of those involved. Research that raises ethical challenges, such as experiments using animals or human embryonic tissue, is equally regulated based on society’s moral values. Safety is another reason for regulation of research, such as gain-of-function experiments with pathogens, to protect society against undue biological risks. In general, freedom of research is important for democratic societies, but it comes with duties and responsibilities. The “Scientific Freedom and Responsibility” report of the American Association for Advancement in Science (AAAS), for instance, explicitly states that the issues of scientific freedom and responsibility are inseparable (<https://www.aaas.org/sites/default/files/Edsall%20report%201975-ScientificFreedomResponsibility.pdf?Xg9S3uV195vOtPjfc8TjoC3m3wIY9CXy>).

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Why is freedom of research worthy of protection, even as a constitutional right? First, as indicated by the AAAS, freedom of research is a foundation of successful research. Researchers are more likely to make important discoveries if they are free to explore various questions and approaches to generate knowledge. Freedom of research should guarantee independent thinking and optimally serve an unbiased approach to generating information and knowledge, which, in the long term, serves society [7].

Second—and this is the argument we want to focus on in this article—freedom of research has an important role as a “safeguards against political repression, not just for scholars but also for citizens” (Gutmann as quoted by [9], p. 509). The free exchange of ideas, including unorthodox ones, is an important feature of a liberal democracy: confrontation with different positions and perspectives supported by research generates a fruitful environment for the development of well-informed and differentiated views in society. Further, freedom of research is another interpretation of the

freedom of opinion and expression [7] protecting scientists against interference and censorship [9].

In accordance with the notion that freedom of research is an important democratic ideal, it is protected by various national constitutions or basic laws [7] and international documents such as the previously mentioned UNESCO recommendation and the European Charter of Fundamental Rights. How important freedom of research is considered to be was recently illustrated by the international reaction to a law amendment in Hungary, which has been widely criticised as endangering academic freedom (e.g. [10]). The law amendment seems to have been targeted particularly against one institution, the Central European University (CEU), which was known to be unpopular with the government.

## Conflicting ideals?

The constitutionally guaranteed “freedom of research” seems to conflict with the previously described understanding of “democratisation of research”, because patient involvement in determining research priorities or RRI as defined above implies that research agendas are aligned with social, economic or political objectives and thus not freely determined by the researchers.

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Conflicting interpretations of these two ideals usually concern applied research. In addition to medicine and agriculture, it is emerging technologies such as synthetic biology or nanotechnology, where these demands are particularly prominent. In contrast, citizen science projects seem more compatible with freedom of research, because it is not the research agenda that is determined by the citizens in this case. The involvement of laypersons complements rather than competes with the role and the freedom of professional scientists, and these projects often deal with basic research objectives such as environmental monitoring [3].

Two democratic ideals for research

We suggest that the two ideals, “freedom of research” and “democratising science”, are both equally relevant in a democratic society. Whether one or the other should have more weight depends on the type of research project.

As discussed above, an important argument for protecting freedom of research is its importance as a safeguard against political repression and for sustaining free exchange of ideas. This ideal is particularly applicable to basic research that aims at understanding the world around us. It allows for new and unexpected discoveries and the development and exchange of unorthodox ideas. New knowledge and discoveries in basic research usually do not compromise other freedoms and rights.

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However, the situation is different when it comes to technological innovation or applied research. Technological innovation has the explicit purpose to change the world and to impact on human lives, and applied research determines which and how societal problems are being addressed. Technological developments in medicine or agriculture directly affect people’s lives including their rights and freedoms. Moreover, technological innovation and applied research aim at solving problems and scientists are not in any particular expert position to decide which problems are the most pressing ones in a society [1]. The democratic ideal of “democratisation of research” thus seems to be more relevant to these types of research.

“Freedom of research” and “democratisation of research” each come with responsibilities. “Freedom of research” is based on a general trust in researchers: the expectation that they strive to make reliable discoveries, and that they report their results truthfully and conduct research without harming people. In that sense, research integrity and

good scientific practice, and safety are prerequisites for appealing to “freedom of research”. Since this ideal should support a free exchange of ideas in academia and in society, “freedom of research” also requires transparency and openness: scientists and other citizens should have access to research results and (ideally) should be able to interact with researchers.

In the context of technological innovation and applied research, however, the responsibilities of researchers go further than integrity, good scientific practice and transparency. Lay people should not only have the opportunity to widen their knowledge by having a share of the results from research, but “democratisation of research” also means that they should be involved in deciding what type of problems should be addressed and by what methods they should be approached. As scientists in the different fields fulfil different roles in democratic societies, they face different responsibilities. In practice, many research projects will be situated somewhere in between basic research and technological innovation. Therefore, the role of different democratic ideals and the ensuing responsibilities must be examined individually for every project (Table 1).

Conclusion

In current science policy frameworks such as RRI, the ideal of “democratisation of research” usually receives more attention with a focus on “acceptability, sustainability and societal desirability of innovation process and its marketable products” ([6], p9). Such a bias supports the impression that scientific research is primarily seen as applied research and a first step towards technological development.

Nonetheless, RRI refers to “research” and “innovation” as two distinct categories. This

could serve as a starting point to distinguish between two types of relevant responsibilities, those in basic research and those in applied research and technological innovation. It would imply that responsible basic research—for example studying the components of a regulatory pathway—would not have to be “societally desirable”. In contrast, responsible innovation—such as the development of a diagnostic test—should account for the societal desirability and impact of such tests and engage with the public in the early stages of the research process. As mentioned above, certain basic research projects, for instance involving animals, may directly compromise other values, such as animal welfare. Freedom of research cannot release a scientist from laws and regulations or from the responsibility of considering these values.

This puts the onus on funders, university administrations and research governance to maintain and protect freedom of research in democratic societies. First, it is necessary to understand the differences between basic research and applied research/technological innovation. Consequently, responsible research and responsible innovation should be discussed as two distinct types of responsibilities. Second, we need to better support basic research, including examples that approach unorthodox research questions and hypotheses in order to maintain the ideal of freedom of research. Lastly, we should foster a discussion on the role of social desirability in science and technology, since in certain cases of basic research, it may limit freedom of research too much.

In summary, applications resulting from scientific knowledge may have a strong impact on democratic societies; therefore, the ideal of “democratisation of research” according to which society should decide the

Table 1. Comparing the two ideals for research in democratic societies.

	Democratisation of research	Freedom of research
Content	Research should be socially desirable, those affected by research should have a say concerning the research agenda.	Academic institutions and researchers should be autonomous in selecting research topics and methods.
Democratic justification	If the aim is to impact on and change societies, those affected should have a say in these changes.	“Freedom of research” safeguards a free exchange of ideas and against repression. It is an interpretation of the rights of freedom in opinion and expression.
Applicability	Applied research, technological innovation	Basic research

future direction of research often prevails in science governance. This can compromise “freedom of research”, when societal desirability, commercial criteria or conformity with the current *Zeitgeist* are the main criteria to decide what type of research should be supported and financed. Such criteria can be justified in a democratic society for projects in applied research and technological innovation, but it is essential to uphold freedom of research in basic research as a basic ideal of open, democratic societies.

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